ABSTRACT OF THE DISCLOSURE

Performance of a transmission system is optimized by compensating for both noise and fiber non-linearities in the transmission system. The transmission system between a transmission terminal and a reception terminal has at least two channels. A processor determines an adjustment for equalizing the predetermined characteristic for each channel, and then reduces the adjustment by a predetermined amount. A plurality of controllers, each associated with a transmitter in the transmission terminal, each receives the reduced adjustment for an associated channel and providing the reduced adjustment to an output of an associated transmitter. The determination of the adjustment may be made using measurements of received signals or may be estimated knowing the characteristics of the amplifiers in the system.